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**B&V WASTE SCIENCE AND TECHNOLOGY CORP.**

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ARCS V/USEPA  
Springfield Township Dump

July 13, 1990

Mr. Dan O'Riordan  
Community Relations Coordinator  
U.S. EPA, Region 5  
230 S. Dearborn  
Chicago, IL 60604

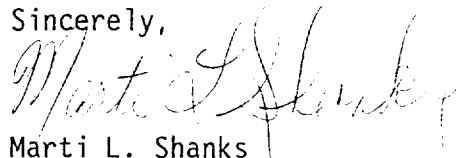
RE: Springfield Township Dump Fact Sheets

Dear Dan:

Submitted with this letter are the Proposed Plan fact sheets for the Springfield Township Dump site. The copies for mailing are folded, stapled and labeled with the site mailing list labels. The remaining copies are unfolded for your use. I have also sent a copy to each of the individuals copied on this letter. At Marilou Martin's request, I have also sent Robin Campbell, MDNR, six fact sheets for her use.

Also attached is a hard copy of the site mailing list for your files. If you have any questions, please call.

Sincerely,

  
Marti L. Shanks  
Community Relations Manager

Encls.

cc: M. Martin, USEPA w/encl.  
C. Norman, USEPA w/encl.  
T. Lesser, USEPA w/encl.  
B. Bruce, BVWST w/encl.

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1990  
SUPERFUND PROGRAM  
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United States  
Environmental Protection  
Agency

Office of Public Affairs  
Region 5  
230 South Dearborn Street  
Chicago, Illinois 60604

Illinois Indiana  
Michigan Minnesota  
Ohio Wisconsin

## EPA Recommends Site Remedy Springfield Township Dump Oakland County, Michigan

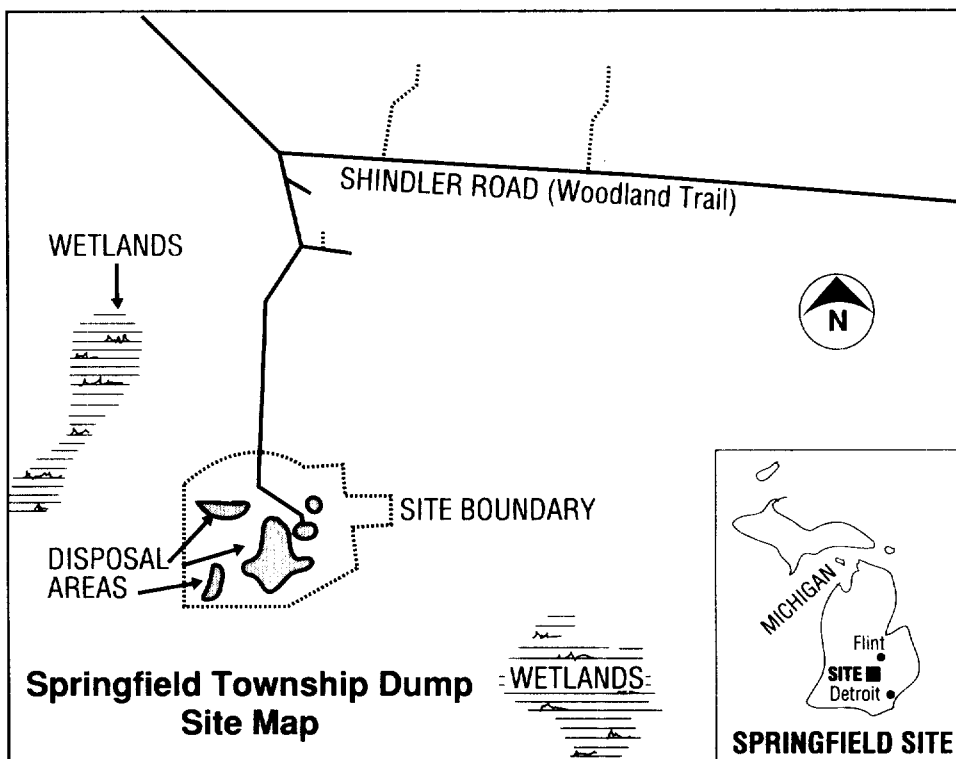
July 1990

### PUBLIC MEETING:

July 24, 1990, 7:00 p.m.  
Springfield Township Hall  
650 Broadway  
Davisburg, MI

### PUBLIC COMMENT PERIOD:

July 13 through August 13, 1990



### INTRODUCTION

The U.S. Environmental Protection Agency (EPA), in cooperation with the Michigan Department of Natural Resources (MDNR), has recommended a cleanup alternative to control contamination at the Springfield Township Dump Superfund site in Oakland County, Michigan. This fact sheet describes the activities conducted to date at the site, and summarizes the Feasibility Study (FS) completed. A glossary of terms used in this fact sheet is on page 7. All words and phrases defined in the glossary appear in bold print the first time they are used. The complete Remedial Investigation (RI) and FS reports, the Proposed Plan, and other documents pertaining to the site, are

available for public review at the local information repository listed on page 8.

The **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** requires that the public be notified of the remedial alternatives being considered and the preferred remedy recommended by the EPA and the MDNR. This fact sheet, along with the public meeting to be held on July 24, 1990, is intended to relay the key elements of the study and EPA's preferred alternative so that the public can submit comments on the recommendation. These comments will be used by EPA in making the final decision of which alternative will be used to control the contamination at the Springfield site.



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## SITE DESCRIPTION AND BACKGROUND

The Springfield Township Dump (Springfield) site is located south of the town of Davisburg, in Springfield Township, Oakland County, Michigan. The site covers approximately four acres lying within a rural residential area located near the junction of Ormond and Shindler Roads (now known as Woodland Trail). The site is located on a local topographic high and consists of an open fenced area surrounded by dense woods.

The Springfield site was used for chemical waste disposal over a period of many years. Liquid wastes and sludges were dumped into a depression (disposal pit) located near the center of the site. Drums of waste materials were also stored at various locations throughout the site.

In 1980, the MDNR conducted a removal action and hauled away approximately 1,500 drums of wastes and 711 tons of contaminated soils. The Springfield site was finalized on the National Priorities List in 1983.

Under a Cooperative Agreement with EPA, MDNR conducted a Remedial Investigation/Feasibility Study (RI/FS) at the site from 1984 to 1986. In January 1988, the project was transferred from MDNR to EPA and is now a federal lead project being conducted in coordination with the MDNR.

## RESULTS OF THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

The RI, consisting of on-site scientific studies and laboratory

analyses, was conducted to determine the nature and extent of contamination at the site. Activities performed to date include soil/sediment sampling, **ground water** sampling, surface water sampling, air quality investigation, monitoring well installation, geophysical investigations, and characterization of the natural environment. The results of the RI indicate contamination in surface and subsurface soils and ground water.

Soil is contaminated extending down to the water table on-site (80-95 feet below the surface), with highest concentrations mainly in a central area of the site near the disposal pit. Subsurface soil contaminants include **polychlorinated biphenyls (PCB's)**, **DDT**, **phenols**, **DDD**, **lead**, and **volatile organic compounds (VOC's)**. Shallow soil contamination is more widespread, consisting of PCB's, **arsenic**, **DDT**, and **diel-drin**. Sampling during the Remedial Design (RD) phase will be done to more accurately determine the current extent of soil contamination.

Ground water contamination, found primarily within the site boundaries, consists of **trichloroethene (TCE)**, **dichloro-ethene (DCE)**, **arsenic**, and **lead**. Residential well contamination would pose an unacceptable risk through ingestion of the carcinogens TCE and arsenic. Results of ground water sampling conducted by MDNR in 1987 indicated that the contamination is migrating to the north. If left untreated, ground water contamination threatens to affect drinking water wells off-site. The shallow soil contaminants pose both a direct contact threat and a threat to the food chain through **bioaccumulation** of toxics.

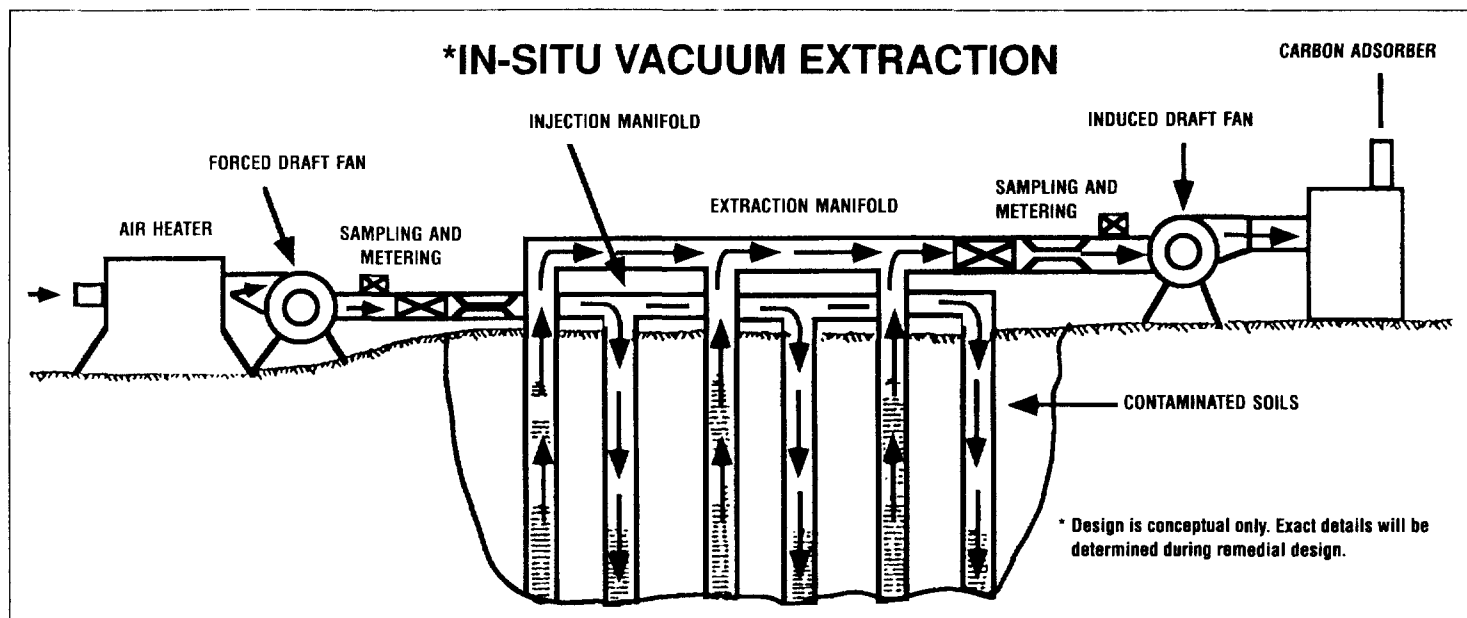
## SUMMARY OF RISKS

A Risk Assessment was made as part of the RI to characterize the nature and estimate the magnitude of risk to public health and the environment caused by the contaminants identified at the site. A variety of organic and inorganic compounds were identified as the contaminants of concern.

In order for a contaminant to be a risk to public health, there must be contact with the contaminant, or an "exposure pathway". The human exposure pathways at the site, both current and future, include contact with the site soil and air, and ingestion of the ground water. The site is fenced, so access to the contaminated soil is currently temporarily restricted. Casual usage of areas in and surrounding the site might possibly expose individuals to potential airborne contaminated particles. Ground water in the area is a source for residential water. However, data from the nearby residential wells indicate that the contaminated ground water has not migrated off-site to impact individual drinking water wells.

The current and future potential impacts to the environment are primarily the adverse effects to wildlife that may inhabit or feed in the fenced-in disposal areas where high levels of contamination were detected in the surface soils.

EPA is recommending the remedial action considered the most comprehensive in removing and treating the on-site contamination in order to minimize or eliminate the risks to public health and the environment.



## PROPOSED REMEDIAL ALTERNATIVES

A Feasibility Study (FS), which examines remedial alternatives for the cleanup of contaminated soil and ground water at the site has been completed. A summary of the alternatives is presented in this document. Soil Alternatives 1-5 address soil contamination, and Ground water Alternatives 1 and 2 address ground water contamination remedies. The alternatives are summarized below and described individually.

### Soil Alternative 1: No Action

EPA requires that a "No Action" alternative be considered. Under the No Action alternative, EPA would not take any action to remove or reduce contaminant levels on-site and ground water would continue to degrade. Institutional controls (deed and land-use restrictions) would be implemented to limit exposure to surface contaminants and may be effective in the short term. Periodic site inspections would be made to determine the need for maintenance of the site fence.

This alternative would have no effect on the reduction of risk to human health or the environment. Costs for this alternative would be incurred for site fencing extensions and deed restrictions, as well as annual site inspections and maintenance. This alternative is easily implementable, but does not protect human health and the environment, nor does it meet any identified ARARs for the site. (For a discussion of ARARs, see #2 in the Nine Evaluation Criteria on page 5.)

Total Estimated Cost: \$87,600

### Soil Alternative 2: Off-site Land Disposal

Alternative 2 would consist of excavating and transporting contaminated soil to an off-site land disposal facility permitted by the **Resource Conservation and Recovery Act (RCRA)**. About 11,820 cubic yards of contaminated soil would be excavated and hauled away by truck. Surface depressions left by excavations would be backfilled with clean soil and graded to prevent surface water ponding. Regula-

tions which forbid land disposal of certain contaminants may prevent implementing this alternative.

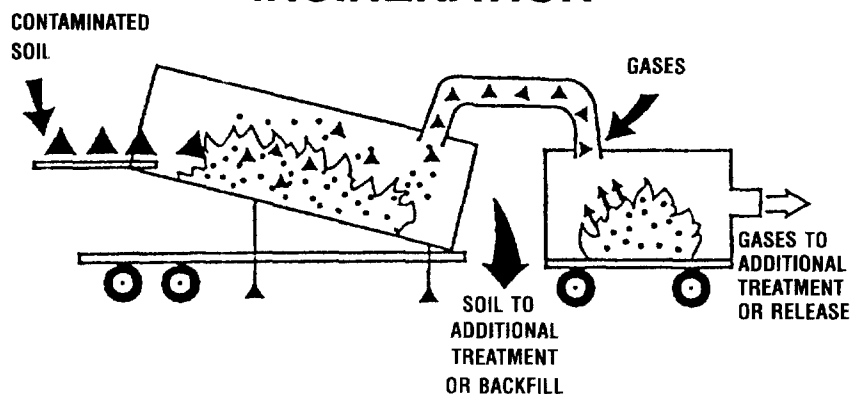
This alternative utilizes a well established technology, but under Section 121(b) of SARA, off-site land disposal without prior treatment is the least preferred method for cleaning up Superfund sites. This alternative does not meet all the identified ARARs.

Total Estimated Cost: \$6,738,560

### Soil Alternative 3: Surficial Capping

Alternative 3 consists of capping the surfaces of the site which exhibit chemical contamination. The cap would serve to prevent contact with surface contaminants. It would also prevent further **leaching** of subsurface chemicals by diverting rainwater away from the contaminated soil and would minimize movement of the soil by preventing erosion by wind and water. The cap would consist of a 36-inch impermeable layer of compacted clay, a synthetic liner, another 24 inches of

## INCINERATION\* (1)



### \*Mobile Incinerator

Incineration involves extremely high temperatures to break hazardous organic substances down into their very basic elements such as carbon, nitrogen, and hydrogen. Incineration would take place on-site using a mobile incinerator, which would be dismantled and removed from the site. Elements produced after initial treatment of contaminated materials are further treated to make safer compounds such as water, carbon dioxide and nitrogen oxides. Some gas is produced through the incineration process, but it is treated to meet federal air quality standards before being released to the atmosphere. Also, an ash residue remains after material is incinerated. This ash will be tested and disposed of on-site within the disposal area. Properly done, high-temperature incineration is a safe, efficient, odorless, and smokeless process that renders most toxic organic waste permanently harmless.

<sup>(1)</sup> Design is conceptual. Exact details will be determined during remedial design.

earthen materials, and finally, clean topsoil and vegetation. Periodic inspection and maintenance would be needed to maintain the physical integrity of the cap.

for this remedy is well-established; however, there is the potential for noise and dust problems during construction. This alternative does not meet all identified ARARs.

Total Estimated Cost: \$914,750

### Soil Alternative 4: On-site Incineration, Solidification

Alternative 4, like Alternative 2, would require approximately 11,820 cubic yards of contaminated soil to be excavated. The soil would be incinerated on-site, permanently destroying the PCB's, VOC's and pesticides. The metals in the resultant ash would be tested and, if needed, solidified to reduce contaminant

mobility. The solidified ash would be backfilled on-site and covered with clean soil. Alternative 4 would protect human health and the environment because the shallow soil contaminants would be destroyed or isolated, and the ground water degradation from these contaminants would be reduced. However, this alternative does not address the volatile organic compounds in the deep soil. On-site field testing of incineration will be performed.

Based upon an estimated feed rate of 5 tons per hour, it would take approximately six months to complete the incineration process after construction of the unit is finished. This alternative would protect human health and the environment, but does not meet all identified ARARs.

Total Estimated Cost: \$8,664,000

If inorganics are immobilized in the incinerator ash, solidification would be unnecessary, resulting in a savings of approximately \$1,530,000.

### Soil Alternative 5: On-site Incineration, Solidification, In-situ Vacuum Extraction

Like Alternatives 2 and 4, Alternative 5 would require that approximately 11,820 cubic yards of contaminated soil be excavated. The soil would then be incinerated on-site, permanently destroying PCB's, VOC's, and pesticides. The metals in the resulting ash would be tested and, if needed, solidified to reduce the movement of hazardous materials. The solidified ash would be backfilled on-site and covered with clean soil.

Human health and the environment would be protected by this alternative. Capping would decrease contamination mobility, but would not reduce contaminant toxicity or volume. Therefore, this alternative is not considered a permanent treatment remedy. The contaminants would still be present, giving rise to both institutional controls and the possible need for future remedial action. It is estimated that it would take three months to install the cap. The technology required

## EPA's Nine Evaluation Criteria

**1. Overall Protection of Human Health and the Environment** addresses whether or not a proposed alternative provides adequate protection, and describes how well a proposed alternative eliminates, reduces, or controls current and future threats to human health and the environment.

**2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)** addresses how the proposed alternative complies with pertinent federal and state regulations. This criterion also considers how an alternative complies with advisories or other guidelines that do not have the status of laws, but that EPA and the state have agreed to follow.

**3. Long-term Effectiveness and Permanence** refers to the ability of a proposed alternative to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

**4. Reduction of Toxicity, Mobility, or Volume** addresses the technical performance of treatment technologies used under a proposed alternative.

**5. Short-term Effectiveness** is a measure of the effectiveness of an alternative in protecting human health and the environment during construction and implementation.

**6. Implementability** is the technical and administrative feasibility of a proposed alternative, including the

availability of goods and services needed to implement the chosen solution.

**7. Cost** addresses capital and operation and maintenance costs of a proposed alternative.

**8. State Acceptance** indicates whether the state concurs, opposes, or has no comment on the preferred alternative.

**9. Community Acceptance** considers community preferences or concerns about proposed alternatives. It will be assessed in the Record of Decision (ROD) following a review of the public comments received on the RI/FS report and the Proposed Plan.

Alternative 5 would also use in-situ vacuum extraction to remove and treat the VOC's which have penetrated to the deeper soil. During this process, wells would be installed below the ground surface. A vacuum attached to the wells would begin a flow of air throughout the soil. This air flow would cause the VOC's to evaporate into a gas. The VOC gas would be released through the wells and captured in a carbon filter for final disposal.

It would take approximately one to two years to implement this alternative. The incineration process is well developed, although the in-situ vacuum extraction process would require testing on the site to verify its effectiveness. This alternative would fully protect human

health and the environment, and meets all identified ARARs.

Total Estimated Cost: \$8,991,668

### **Ground Water Alternative 1: No Action**

Alternative 1 would restrict future ground water use at or near the site and would monitor the potential movement of contaminants off-site. Supplemental monitoring wells would be installed on-site to help track the plume. Wells would be sampled twice a year, and a contingency plan for future site action would be developed if the contaminants were to exceed predetermined limits.

This alternative would not be fully protective of human health, and adverse environmental

effects may be expected based on the ground water monitoring results. The presence of many different chemicals in the soil above the plume indicates that future contamination of the ground water will occur at higher concentrations. No reduction in toxicity, mobility, or volume would result from the remedy. The remedy is easily implemented, but not protective of human health and the environment. It also does not meet identified ARARs.

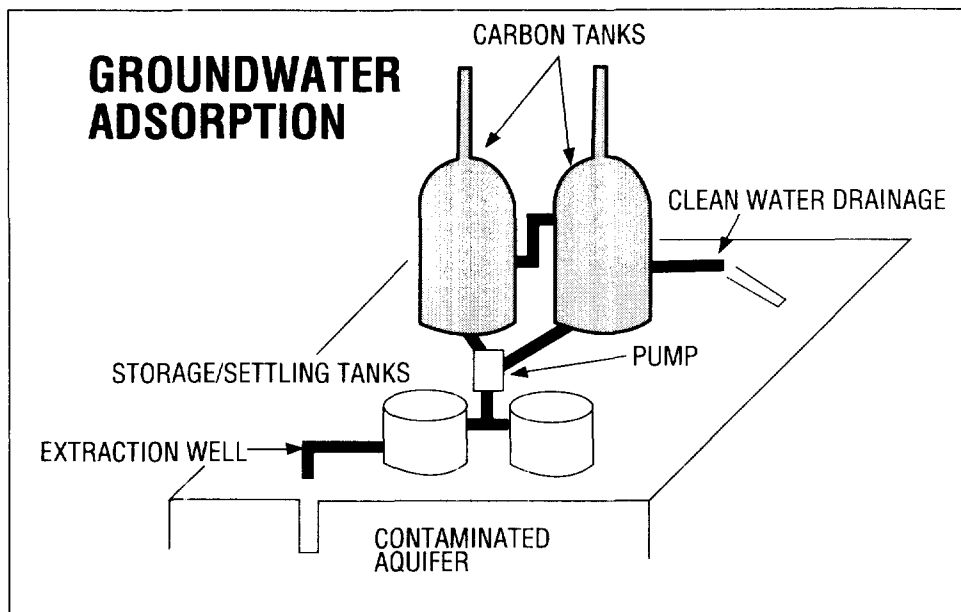
Total Estimated Cost: \$504,600

Additional costs may be incurred in the future if off-site drinking water wells are contaminated by the Springfield plume. These costs have not been calculated at this time.

## Ground Water Alternative 2: Ground Water Extraction and Carbon Adsorption

Alternative 2 would utilize a system of extraction wells to arrest and reverse the movement of the ground water on-site. The acidity/alkalinity levels of the ground water would be adjusted to enhance efficiency of the treatment process, and activated carbon would then be employed to remove trace quantities of TCE and arsenic. TCE, arsenic, and lead levels would be reduced to conform with federal drinking water standards. Following treatment and testing, it is anticipated that the cleaned water would be discharged back into the ground water system. Additional ground water sampling would be done during Remedial Design (RD) to better determine the extent of ground water contamination, and the ground water remedy would be refined based on the results of that sampling.

This alternative, coupled with an appropriate soil remediation alternative, would be fully pro-



ductive of human health and the environment since the contaminants in the ground water would be reduced to protective levels. This remedy is easy to implement, and meets all the identified ARARs for the site.

Total Estimated Cost: \$279,600

## SCOPE AND ROLE OF REMEDY

EPA developed and evaluated these options to address the contamination found in the soil and ground water. After careful analysis of those alternatives,

EPA has defined its preferred remedial alternative.

EPA's preferred alternative for the Springfield site will address the source of contamination through remediation of soil and of the ground water. Remediation of the soil will prevent future ground water degradation and will also remove the real and potential direct contact hazard posed by the PCB's. Remediation of the ground water will restore the aquifer to drinkability and prevent contamination of drinking water wells at nearby homes.

## PREFERRED ALTERNATIVE

Based upon the evaluation of the nine criteria, EPA recommends Soil Alternative 5 and Ground Water Alternative 2 as the preferred alternatives for remediation of the Springfield site: excavation, incineration, and solidification of soil with in-situ vacuum extraction, and ground water extraction and treatment via carbon adsorption.

Of the alternatives which treat the soil contaminants on a permanent level, only Soil Alternative 5 most completely destroys hazardous materials, and is considered to be the most reliable. Incineration will destroy all but the inorganics, which in turn will be solidified in a non-leachable form if necessary. In-situ vacuum extraction will remove and

destroy the VOC's from the deeper soils where they now have the potential to leach into the ground water.

For the ground water, only Ground Water Alternative 2 is desirable, because it allows for treatment of the contaminated water, at half the cost of monitoring alone.

## GLOSSARY

**Arsenic** - A grayish-white element found naturally in the environment. Doses taken over long periods of time have been associated with birth defects and genetic damage in laboratory animals. There is also evidence that it can cause skin and lung cancer in humans.

**Bioaccumulation** - The accumulation of substances, such as PCB's, that increase in concentration in living organisms as they breathe contaminated air, drink contaminated water, or eat contaminated food. Through this process, these substances move up the food chain and become concentrated in tissues or internal organs of various organisms. For example, PCB's in a river or lake may be eaten by small fish. The small fish may then be eaten by larger fish, which may then be eaten by birds, animals, or humans.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** - Enacted in 1980 and also known as Superfund, this law authorizes the federal government to respond directly to releases (or threatened releases) of hazardous substances that may endanger public health, or welfare, or the environment. The U.S. Environmental Protection Agency is responsible for managing the Superfund program.

**DDD (also known as TDE)** - An insecticide used similarly to DDT. It is absorbed through the skin when in solution form and is considered less toxic to mammals than DDT.

**DDT** - An insecticide which is extremely persistent in the environment and can bioaccumulate in the fatty tissues of certain animals. EPA banned the registration and interstate sale of DDT in 1972.

**Dichloroethene (DCE)** - A colorless, volatile liquid. Exposure to DCE has been associated with damage to the central nervous system, liver, and kidneys.

**Dieldrin** - An insecticide which is harmful to humans when ingested by skin contact, inhalation, or swallowing.

**Ground water** - Water which fills the spaces between clay, silt, sand, rock, and gravel particles beneath the earth's surface. Precipitation, such as rain, reaches the ground and then slowly moves through soil, sand, gravel, and rock into small cracks and crevices beneath the ground surface. During a process which can take many years, this filtered water eventually provides a water source that is naturally pure. This water may then be withdrawn by wells for use as drinking water.

**Leaching** - A process by which a liquid which has percolated through contaminated soils picks up hazardous substances found in those soils.

**Lead** - A byproduct of metal smelting, lead is used in the manufacture of batteries and pigments, and is added to gasoline to improve octane ratings. Exposure to low levels of lead over long periods of time can cause brain, bone, and neurological damage, as well as learning disabilities in children.

**Phenols** - Organic compounds that are byproducts of petroleum refining, leather tanning, and textile, dye, and resin manufacturing. Low concentrations in water cause taste and odor problems; higher concentrations have been known to cause death in aquatic life and humans.

**Polychlorinated Biphenyls (PCB's)** - A group of organic compounds used, since 1926, in electric transformers as insulators and coolants, as well as in lubricants, carbonless paper, adhesives, and caulking compounds. They are extremely persistent in the environment because they do not break down into new and less harmful chemicals. PCB's are stored in the fatty tissues of humans and animals through the bioaccumulation process, can cause liver damage, and have been associated with cancer in laboratory animals. EPA banned the general use of PCB's in 1979.

**Resource Conservation and Recovery Act (RCRA)** - A federal law enacted in 1976 that regulates the current generation, transportation, treatment, storage, and disposal of hazardous materials.

**Trichloroethene (TCE)** - A colorless liquid used as a solvent, metal degreasing agent, and in other industrial applications. TCE is a central nervous-system depressant, and may cause liver or kidney damage. Animals exposed to high doses have developed cancer.

**Volatile Organic Compounds (VOC's)** - A group of carbon-containing chemical compounds that have a tendency to evaporate when exposed to air. Because of this tendency, VOC's disappear more rapidly from surface water than from ground water. Since ground water does not usually come into contact with air, VOC's are not easily released and can be present in drinking water obtained from wells. VOC's may pose a threat to human health. Some VOC's are believed to cause cancer in humans.

## MAILING LIST ADDITIONS AND CORRECTIONS

To be placed on the mailing list to receive information on the Springfield site or to update your mailing address, please fill out and mail this form to:

Dan O'Riordan  
Community Relations Coordinator  
U.S. EPA, 5PA-14  
230 S. Dearborn  
Chicago, IL 60604

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Affiliation: \_\_\_\_\_

## ROLE OF THE COMMUNITY IN THE PROCESS

The Proposed Plan for the Springfield site is meant to provide interested parties with a summary of remedial alternatives analyzed in the FS and the rationale for selecting a preferred alternative. The EPA requests that the public provide comments on all of the alternatives discussed in the Proposed Plan and in the detailed analysis of the FS, not just on the preferred alternative. The public should review the FS, Proposed Plan, and other pertinent documents in the repository, as they provide a more detailed description of the alternatives contemplated for the Springfield site.

All documents developed and released to the public are available for public inspection and copying at:

The Springfield Township Hall  
650 Broadway  
Davisburg, MI 48019

Public comments are an important part of selecting a final remedial action for the site. Written and verbal comments will be accepted from July 13 to August 13, 1990, and will be addressed in the Responsiveness Summary of the record of Decision (ROD). All comments should be directed to:

Dan O'Riordan  
Community Relations  
Coordinator  
U.S. EPA, 5PA-14  
230 S. Dearborn  
Chicago, Illinois 60604  
(312) 886-4359

Technical questions should be directed to:

Marilou Martin  
Remedial Project Manager  
U.S. EPA, 5HS-11  
230 S. Dearborn  
Chicago, Illinois 60604  
(312) 353-6284

Toll free number for both:  
1-800-621-8431  
(8:30 a.m. to 4:30 p.m. C.S.T.)

Robin Campbell  
State Project Manager  
Mich. Dept. of Natural Resources  
Superfund Section  
KNAPP Bldg., 300 S. Washington  
Lansing, MI 48933  
(517) 373-6790

EPA will hold a public meeting on July 24, 1990, at the Springfield Township Hall, to discuss the proposed remedial alternatives for the Springfield site. Oral and written comments will be accepted during the public meeting. A transcript of the meeting will be made and entered into the files at the repository listed above. Final selection of a remedial alternative to be implemented at the Springfield site will not be made until after the public comment period has concluded.



U. S. Environmental Protection Agency  
Region 5  
Office of Public Affairs (5PA-14)  
230 South Dearborn Street  
Chicago, IL 60604